ECONOMIC COST MODEL
(For purposes of computing the relative priority of projects in the submission of the 1967 5-year program only.

Present-value analysis is an attempt to account for the time variable in calculating costs. That is, merely adding the stream of yearly costs for each alternative, and then comparing the sums, is not sufficient since such a procedure does not allow for the time value of money. If the spending of a dollar today can be postponed to some time in the future, then that retained dollar can be invested now in some other way and grow to be worth more or, and perhaps more applicable to Government, that dollar might be used to retire debt and thus avoid payment of interest. Consider, for example, the case where a dollar can be invested at a rate of 10 percent per year. One year from now that dollar will have grown to $1.10. In two years that dollar will have grown to $1.21, i.e., the present value of $1.21 at 10 percent two years in the future is $1.00 today. Carrying this one step further, $1.00 two years in the future may be said to be worth $1.00/$1.21 = $.826 today. Therefore, $1.00 two years in the future has a present value of $.826. Similarly, a payment of $15.00 two years in the future is equivalent to a payment of $15.00/$1.21 = $12.40 now.

Present-value analysis is simply an admission that a dollar spent today is of greater present value than a dollar spent some time in the future. In the case of public buildings, for example, if a facility requires a $100,000 per year expenditure for maintenance and operations it cannot be realistically contended that a $100,000 expenditure ten years hence is the same as a $100,000 site cost today. In terms of present value, in fact, the M & O expense, at a 4 1/2% discount rate over 10 years has a present value of $64,393 while the site cost, of the same amount, has a present value of $100,000. This is the essence of determining the present value of a stream of cash costs. For the cash costs associated with a given project for each year in the future, an equivalent present value is determined using this method. Then all the present value figures so determined for a given alternative are added together to determine the present value of the stream of costs for the alternative as a whole.

The attached represents a comparision of the cost of construction vs leasing using this method:

I. Problem

The problem involves a hypothetical proposed construction project of a Federal Office Building. The pertinent data concerning this project as follows: